CLAIMS

1. A method for producing a glass sheet coated with a titanium oxide thin film, which comprises adhering mist of titanium element-containing liquid particles to the surface of a glass substrate so as to coat the surface of the glass substrate with the liquid, thereby forming thereon a titanium oxide thin film having a micro-roughness on the surface thereof.

2. The method for producing a glass sheet as claimed in claim 1, wherein after coated with the liquid, the glass substrate is once dried and then repeatedly coated.

3. The method for producing a glass sheet as claimed in claim 1 or 2, wherein an air spray gun is used in coating with the liquid, the air pressure applied to the air spray gun is from 0.13 to 0.8 MPa, and the jet mist amount out of the nozzle of the gun per unit time is from 1 to 10 ml/min.

4. The method for producing a glass sheet as claimed in any of claims 1 to 3, wherein plural air spray guns are used at the same time in coating with the liquid, and the coating is so controlled that the mist from each air spray gun does not overlap with each other.

5. The method for producing a glass sheet as claimed in claim 3 or 4, wherein the coating is carried out while the distance between the nozzle tip and the surface of the glass substrate is kept from 10 to 50 cm.

6. The method for producing a glass sheet as claimed in any of claims 3 to 5, wherein the glass substrate is previously heated before coated with the liquid.

7. The method for producing a glass sheet as claimed in any of claims 3 to 6, wherein the coating is carried out while the glass substrate is moved and the air spray gun is scanned in the direction crossing the moving direction.

8. The method for producing a glass sheet as claimed in claim 1 or 2, wherein an ultrasonic spray is used in coating with the liquid, and the liquid temperature in the liquid tank of the ultrasonic spray is set higher by from 5 to 90°C than the surface temperature of the glass substrate.

9. The method for producing a glass sheet as claimed in any of claims 1 to 8, wherein after the surface of the glass substrate has been coated with the liquid, it is heated to form a titanium oxide thin film thereon.

10. The method for producing a glass sheet as claimed in claim 9, wherein the surface coated with the liquid is heated up to a maximum temperature of from 550 to 700°C, and then cooled under the condition satisfying the following formula (1):

$$0.2 \leq a/t^2 \leq 5 \qquad (1)$$

wherein a represents the time (second) taken in cooling the surface from 500°C to 200°C,

t represents the thickness of the glass substrate (mm).

11. A method for producing a glass sheet coated with

a titanium oxide thin film, which comprises applying a titanium element-containing liquid to the surface of a glass substrate having a surface compressive stress of at most 10 MPa, then heating the liquid-coated surface up to a maximum temperature of from 550 to 700°C, and cooling it under the condition satisfying the following formula (I) to thereby make the glass substrate have a surface compressive stress of from 20 to 250 MPa:

$$0.2 \leq a/t^2 \leq 5 \qquad (1)$$

wherein a represents the time (second) taken in cooling the surface from 500°C to 200°C,

t represents the thickness of the glass substrate (mm).

12. The method for producing a glass sheet as claimed in claim 11, wherein the time for which the temperature of the surface coated with the liquid falls within a temperature range of from 550 to 700°C is from 20 to 500 seconds.

13. The method for producing a glass sheet as claimed in claim 11 or 12, wherein the surface is heated under the condition satisfying the following formula (2):

$$5 \leq b/t \leq 30 \qquad (2)$$

wherein b represents the time (second) taken in heating the surface from 200°C to 500°C,

t represents the thickness of the glass substrate (mm).

14. The method for producing a glass sheet as claimed in any of claims 1 to 13, wherein the glass substrate contains

from 5 to 15 % by weight of an alkali metal.

15. The method for producing a glass sheet as claimed in any of claims 1 to 14, wherein the area of the glass substrate is at least 0.5 m^2.

16. The method for producing a glass sheet as claimed in any of claims 1 to 15, wherein after the surface of the glass substrate is washed with an acidic aqueous solution and a surfactant-containing aqueous solution, it is coated with the liquid.

17. The method for producing a glass sheet as claimed in any of claims 1 to 16, wherein the titanium element content of the liquid is from 0.1 to 10 % by weight.

18. The method for producing a glass sheet as claimed in any of claims 1 to 17, wherein the liquid is a sol that contains titanium oxide particles.

19. The method for producing a glass sheet as claimed in any of claims 1 to 18, wherein the mean thickness of the titanium oxide thin film to be formed is from 0.02 to 1 μm.

20. The method for producing a glass sheet as claimed in any of claims 1 to 19, wherein the titanium oxide thin film to be formed comprises anatase-type titanium oxide.

21. The method for producing a glass sheet as claimed in any of claims 1 to 20, wherein the ten-point mean roughness Rz, as defined by JIS B, of the surface of the titanium oxide thin film to be formed is from 5 to 50 nm.

22. The method for producing a glass sheet as claimed in any of claims 1 to 21, wherein the glass sheet has a haze value of at most 5 %.